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## Christmas Bird Count

# The Effects of Drought on Texas Bird Populations

By Brent Ortego

When I moved to Texas from Louisiana in 1982, I thought a drought was a period with complete absence of rain. I have since learned that it is an extended period of below-normal rainfall—and what actually qualifies as a drought depends on the region. Ten inches of rain for the year in East Texas would have dramatic impacts while 10 inches in El Paso would be about normal. The Victoria area where I live received 95 inches of rain during the four years of drought. This was 65 inches below average. And while there is almost always a drought occurring somewhere in the western United States, the ongoing drought in Texas is notable its intensity and duration of over five years.

The severity of this drought has been compared to the drought of record during the 1950's which was reported to have suppressed the native grasslands to the point that allowed for brush invasion; conservationists and landowners have been trying to control the brush ever since. The Coastal Prairie, which formerly covered seven million acres, now only covers less than 5 percent of that amount, and it requires a continuous battle to keep these acres from turning into brushlands. The Texas Forest Service estimated that over 301 million trees died of drought related causes during 2011. Reservoirs west of Austin are at less than 40 percent of capacity, and Lake Meredith in the Panhandle (the site of two Christmas Bird Counts) is dry.

Major climatic events like droughts, wet periods, and global temperature changes can have dramatic effects on ecosystems and eventually cause alteration of ecological boundaries if they last long enough. Native habitats produce less forage/habitat for all wildlife. Deep wetlands become shallower and bays saltier.

## AVIAN IMPACTS

There are many obvious social and economic impacts associated with this on-going drought, but the impacts to bird communities are nuanced. To determine potential correlations between drought and bird numbers, I looked at Texas Christmas Bird Count (CBC) data, comparing data from the four most recent non-drought years to the four drought years (107<sup>th</sup>-114 CBC seasons).

Some of the drought's impacts are clear. A dry Lake Meredith means no waterbirds from the lake. Little rainfall over the Laguna Madre shifted salinities from 30 percent above sea strength to 150 percent above, possibly resulting in the decline of waterbirds, from 340,000 during the 111<sup>th</sup> CBC down to less than 100,000 in recent years. Little rice production along the Colorado River resulted in much lower waterbird counts at Matagorda County and Attwater CBCs, and to some degree along most of the Texas Coast since many of these species are wide ranging. The desiccation of Choke Canyon Reservoir resulted in very few water birds.

The drought also yields short-term benefits. Low lake levels near the Guadalupe River Delta CBC during 2011 resulted in habitat for about 100,000 waterbirds, plus Whooping Cranes and Piping Plovers for that season. Depleted reservoirs in eastern Texas became vegetated and provided more food/habitats to some bird species.

Other impacts of the drought are subtler. Do millions of dead and dying trees reduce passerine numbers, but increase woodpeckers? Did waterbirds, which normally winter in Texas, keep flying south or do they concentrate in the best areas available? Do bird communities shift their winter range to the moisture levels more suitable for their survival? Are birds exposed to more predation because they have to spend more time foraging for low food supplies?

Birders on CBCs reported an average of 10 fewer species annually during the drought, including vagrants and species at the edge of their winter range. Thirty species had significant population increases during the drought and 46 species had significant population declines. Thus, more than 20 percent of the species regularly occurring on Texas CBCs showed a significant population change during the four years of drought. These species were equally divided between year-round and winter residents.

## Christmas Bird Count Drought Roundup, By Bird Type

## Geese and Ducks

Snow Goose numbers, which are heavily dependent on rice, declined. So did Blue-winged Teal and Lesser Yellowlegs, both of which depend on shallow freshwater wetlands. However, Redhead and Common Merganser populations increased. These latter two species occupy deep-water habitats.

The Mottled Duck, a species we know has been declining since 1997 based on aerial surveys and banding studies conducted by Texas Parks and Wildlife Department, did not have a significant decline during the drought.

## Grassland Birds

Ring-necked Pheasant, Scaled Quail, Gambel's Quail, and Northern Bobwhite had significant declines of about 50 percent of their local populations, suggesting that the conditions in upland habitats for gallinaceous birds are especially harsh. The Loggerhead Shrike population increased by 18 percent in these same habitats.

## Shorebirds

Double-crested Cormorant populations increased by 21 percent, possibly benefitting from fish being confined to smaller lakes. However, Great Egret, Little Blue Heron, Green Heron, and White-faced Ibis (all species that forage primarily in shallow wetlands) declined by about 30 percent. Drying freshwater wetlands may have been a major contributor. The Black-crowned Night-Heron, a nocturnal foraging species of tidal marshes, increased by 22 percent.

## Raptors and Scavengers

Sharp-shinned Hawk and Golden Eagle populations had significant declines while Black Vulture, Red-tailed Hawk, Crested Caracara, and Peregrine Falcon increased by about 20 percent each. Crested Caracaras are primarily scavengers; they have shown a major increase in Texas over the last four years, with a record 2,544 reported during the 114<sup>th</sup> CBC. The species appears to be increasing at a faster rate in areas outside of its traditional South Texas thorn scrub communities. This species is a frequent forager along highways, and in poultry and aquaculture facilities.

## Marsh birds

Marsh birds including Yellow Rail, Black Rail, Clapper Rail, King Rail, Sora, Common Gallinule, and American Coot had significant population declines of about 50 percent, all likely related to the drying of interior wetlands and the higher salinities in the coastal marshes. Virginia Rail is the only member of this guild that maintained a stable population.

## Doves

Both Eurasian Collared-Doves and White-winged Doves had record tallies this season despite the drought. The collared-dove has made major increases every year since the 101<sup>st</sup> CBC season, shortly after it invaded Texas. The White-winged Dove population expansion is tracked well by CBCs. The species was recently forced to leave its major breeding area in the Lower Rio Grande Valley in record numbers when freezes destroyed the major nesting substrate for the species. The species pioneered urban areas to the north and its population has been increasing ever since.

## Hummingbirds

Ruby-throated, Black-chinned, and Calliope hummingbirds all had significant increases in the past four seasons, possibly reflecting increasing numbers of people managing for them at their homes rather than changing environmental conditions.

## Kingfishers

All three species of kingfishers had their lowest tallies since the 102<sup>nd</sup> CBC season, with only the Belted population being significant.

## Woodpeckers

Lewis's, Golden-fronted, Ladder-backed and Pileated woodpecker showed significant population increases. Are woodpeckers responding to increased tree mortality and stress during the drought that likely increased their food supply in the short term? Nobody is monitoring their food, but droughts stress and kill trees. Stressed and dead trees are very susceptible to wood boring insects which woodpeckers eat.

## Passerines

The drought has likely negatively impacted many insectivorous birds and passerines. Winter insect numbers during the drought were low. A “country rule-of-thumb” is that if you have mosquitoes you are likely going to have many other insects, and if you lack mosquitoes there is a good chance other insect numbers will also be low. I attended 10 CBCs in Texas during the 114<sup>th</sup> season with most being in coastal wetlands and only used insect repellent once.

## Flycatchers

Last season, seven flycatcher species showed declines, with only the Ash-throated having significant declines throughout the period. The Scissor-tailed Flycatcher has showed remarkable increases on CBCs since the early 90's. Large early winter concentrations have been found in urban areas and also at the Choke Canyon Reservoir. Is this increase the result of birds over-wintering, or is it just that more Scissor-tails are migrating later?

## Vireos

Both White-eyed and Blue-headed vireos declined by about 40 percent during the drought. Low insect numbers in riparian areas near the Coast likely had an effect on these populations.

## Titmice

The Black-crested Titmouse had a significant 26 percent population increase. This is particularly of note as both numbers and geographic coverage were significantly reduced for this species because all titmice from the known zone of hybridization with the Tufted Titmouse along the Interstate-35 corridor are now listed as hybrids in the CBC database.

## Wrens

Cactus, Winter, Sedge, and Marsh wrens had significant declines of about 33 percent of their populations. Ruby-crowned Kinglets declined by 31 percent and Black-tailed Gnatcatcher by 71 percent. These declines are another sign of a widespread lack of insects.

## Warblers

At least 20 species of warblers are identified each season in Texas. Most occur in too-low numbers to analyze population changes. For those that do, Black-throated Green and Pine warblers and Yellow-breasted Chat showed significant population declines of at least 40 percent.

## Sparrows

Chipping, Nelson's, and Seaside sparrows showed population declines, while Spotted Towhee, Harris's Sparrow and Lesser Goldfinch showed population increases. The Nelson's and Seaside primarily occupy tidal salt marshes and both declined by 50 percent. The Chipping, which only decreased by 10 percent, uses mostly a mixture of upland grassland and woodlands. The Spotted Towhee and Harris's Sparrow population trend was influenced by a major invasion during the 112<sup>th</sup> CBC. The Lesser Goldfinch showed a 200 percent increase during the drought. This species is mostly associated with bird feeders during winter, and it will be interesting to determine if this increase continues after this drought is eventually over.

Some days, it feels as if the drought will never end. If, like myself, you are an optimist, however you are one day closer today to the next rain.

Species Population Trends During Droughts on Texas CBCs, 107th-114th

%		%	
SPECIES	INCREASE	SPECIES	DECLINE
Redhead	87	Fulvous Whistling-Duck	72
Common Merganser	93	Snow Goose	49
Double-crested Cormorant	21	Blue-winged Teal	37
Black-crowned Night-Heron	22	Ring-necked Pheasant	80
Black Vulture	19	Scaled Quail	51
Red-tailed Hawk	23	Gambel's Quail	50
Rough-legged Hawk	60	Northern Bobwhite	41
Crested Caracara	31	Pacific Loon	33
Peregrine Falcon	23	Great Egret	26
Whooping Crane	53	Little Blue Heron	32
Long-billed Curlew	26	Green Heron	39
Bonaparte's Gull	55	White-faced Ibis	55
Lesser Black-backed Gull	200	Sharp-shinned Hawk	13
Ruby-throated Hummingbird	42	Golden Eagle	56

Black-chinned Hummingbird	190	Yellow Rail	70
Calliope Hummingbird	200	Black Rail	50
Golden-fronted Woodpecker	26	Clapper Rail	59
Ladder-backed Woodpecker	23	King Rail	74
Pileated Woodpecker	15	Sora	40
Brown-crested Flycatcher	100	Common Gallinule	45
Scissor-tailed Flycatcher	100	American Coot	47
Loggerhead Shrike	18	Lesser Yellowlegs	24
Black-crested Titmouse	26	Wilson's Snipe	47
Clay-colored Thrush	63	Wilson's Phalarope	96
Spotted Towhee	76	Least Tern	83
Harris's Sparrow	149	Groove-billed Ani	79
Smith's Longspur	332	Belted Kingfisher	11
Lesser Goldfinch	201	Red-cockaded Woodpecker	71
		Ash-throated Flycatcher	43
		White-eyed Vireo	43
		Blue-headed Vireo	42
		Cactus Wren	37
		Winter Wren	35
		Sedge Wren	35
		Marsh Wren	30
		Ruby-crowned Kinglet	31
		Black-tailed Gnatcatcher	71
		Curve-billed Thrasher	25
		Black-throated Green Warbler	60
		Pine Warbler	41
		Yellow-breasted Chat	51
		Chipping Sparrow	10
		Nelson's Sparrow	54
		Seaside Sparrow	58

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